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IS 11945 (1987): Charge chrome [MTD 5: Ferro Alloys]

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Indian Standard

SPECIFICATION FOR CHARGE CHROME

UDC 669·15·26

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 2

June 1987

Indian Standard

SPECIFICATION FOR CHARGE CHROME

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(*Continued on page* 2)

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Indian Standard

SPECIFICATION FOR CHARGE CHROME

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 11 February 1987, after the draft finalized by the Ferro Alloys Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 Nowadays an alloy of iron and chromium with 50 percent minimum chromium known as 'charge chrome' is being produced utilizing chrome ores with chromium to iron ratio as low as 1·8 compared to the minimum chromium to iron ratio of 2·2 of chrome ores required for producing high carbon ferro chrome with minimum 60 percent chromium. Quite a number of countries do not differentiate between charge chrome and high carbon ferrochromium and treat charge chrome as just another low grade high carbon ferrochromium. Charge chrome is widely used for the production of stainless steels while adopting processes like argon oxygen decarburization (AOD), vacuum oxygen decarburization (VOD), Creusentloire uddeholm (CLU), etc. The low grade chrome ores suitable for the production of charge chrome are abundently available in India. These low grade chrome ores are otherwise not utilizable and the export of these ores is economically not viable. India has already established itself as one of the leading exporters of charge chrome. Keeping in view of the importance, it was decided to prepare a standard for charge chrome giving the various quality requirements of this product.

0.3 This standard contains **5.1**, **6.1** and **9.1** which call for an agreement between the purchaser and the supplier.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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*Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard covers the requirements for a specific iron and chromium alloy known as charge chrome used for the production of stainless steels by processes, such as AOD, VOD, and CLU.

2. DEFINITION

2.1 Charge Chrome — An alloy of iron and chromium having chromium content less than 60 percent and commonly used for the production of stainless steels by processes like AOD, VOD, CLU, etc. It may be produced from chrome ores conforming to the grade for charge chrome given in IS : 10818-1984* and is distinguished from high carbon ferrochrome (60 to 70 percent chromium) due to its lower chromium content.

3. GRADE

3.1 Charge chrome shall be of one grade as specified below:

Constitutent	*Percent*
Chromium	Less than 60·0
Carbon	6·0 to 8·0
Silicon	4·0 *Max*
Phosphorus	0·035 *Max*
Sulphur	0·030 *Max*

4. SUPPLY OF MATERIAL

4.1 General requirements relating to the supply of charge chrome shall be as laid down in IS : 1387-1967†.

5. CHEMICAL COMPOSITION

5.1 The chemical composition of the material shall be determined either by the method specified in IS : 1559-1961‡ or any other established instrumental/chemical method. In case of dispute the procedure specified in IS : 1559-1961‡ shall be the referee method. For analysis of elements not covered in IS : 1559-1961‡ the referee method shall be as agreed to between the purchaser and the supplier.

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*Specification for chromite for metallrugical industry.

†General requirements for the supply of metallurgical materials (*first revision*).

‡Methods of chemical analysis of ferro alloys.

6. SIZE

6.1 Unless otherwise agreed to between the supplier and the purchaser, the material shall be supplied in sizes between 10 and 200 mm with the proportion of under size and oversize limited to 10 percent in each container (*see* **9.1**).

7. EXTRANEOUS CONTAMINATION

7.1 The material shall be as free as possible, from extraneous contaminations like slag, non-metallic inclusions, etc.

8. SAMPLING

8.1 The material shall be sampled in accordance with the procedure laid down for ferrochromium (high carbon) in IS : 1472-1977*.

9. PACKING

9.1 The material shall be supplied, packed in suitable containers, in quantities as mutually agreed to between the purchaser and the supplier.

10. MARKING

10.1 The material shall be marked with the supplier's name or trademark.

10.1.1. The material may also be marked with the Standard Mark.

NOTE — The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act 1986 and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or processors, may be obtained from the Bureau of Indian Standards.

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*Methods of sampling ferro alloys for determination of chemical composition (*first revision*).

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	1 N = 1 kg.m/s^2
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2

AMENDMENT NO. 1 MARCH 1995
TO
IS 11945 : 1987 SPECIFICATION FOR CHARGE CHROME

(*Page* 5, *clause* **9.1**, *line* 1) — Add the words 'or loose' after the word 'containers'.

(MTD 5)

Reprography Unit, BIS, New Delhi, India